The listing of claims presented below replaces all prior versions and listing of claims in the application.

Listing of claims:

1. (Currently amended) An inorganic-organic hybrid (IOH) which comprises:
(i) an expandable or swellable layered inorganic component which is naturally occurring or a synthetic analogue of a polysilicate having a platelet thickness less than 5 nanometers and an aspect ratio greater than 10:1; and
(ii) an organic component including at least one ionic organic component and one or more neutral organic components which are intercalated between and/or associated with the layer(s) of the inorganic component in which the neutral organic component is a neutral derivative of a nitrogen based molecule and the ionic organic component is an ionic derivative of a triazine-based molecule,
the ionic or neutral organic components being capable of decomposing or subliming endothermically, and/or releasing volatiles with low combustibility on decomposition and/or inducing charring of organic species during thermal decomposition or combustion.

2. (original) An IOH according to claim 1, in which the inorganic component is rendered positively or negatively charged due to isomorphic substitution of elements within the layers.

3. (Canceled)
4. (canceled)

5. (original) An IOR according to claim [[4]] 1, in which the naturally occurring or synthetic analogue of a phyllosilicate is a smectite clay.

6. (original) An IOH according to claim 5, in which the smectite clay is selected from montmorillonite, nontronite, beidellite, volkonskoite, hectorite, bentonite, saponite, sauconite, magadiite, kenyaite, laponite, vermiculite, synthetic micromica and synthetic hectorite.

7. (previously presented) An IOH according to claim [[5]] 1, in which the naturally occurring phyllosilicate is selected from bentonite, montmorillonite and hectorite.

8. (Canceled)

9. (original) An lOR according to claim [[8]] 1, in which the aspect ratio is greater than about 50:1.

10. (previously presented) An IOH according to claim [[8]] 1, in which the aspect ratio is greater than about 100: 1.

11. (previously presented) An IOH according to claim 1, in which the inorganic component includes intedayer or exchangeable metal cations to balance the charge.

12. (original) An IOH according to claim 11, in which the metal cation is selected from an alkali
metal and alkali earth metal.

13. (original) An IOH according to claim 12, in which the alkali or alkali earth metal is selected
from Na^+, K^+, Mg^{2+} and Ca^{2+}.

14. (previously presented) An IOH according to claim 11, in which the cation exchange capacity of the inorganic component is less than about 400 milli-equivalents per 100 grams.

15. (previously presented) An IOH according to claim 11, in which the ionic organic component is exchanged with the exchangeable metal ions of the inorganic component.

16. (Canceled) .

17. (canceled)

18. (Canceled)

19. (Currently amended) An IOH according to claim ~~18~~ 1, in which the neutral derivative of a nitrogen based molecule ~~neutral~~ is a triazine based species.

20. (Currently amended) An IOH according to claim ~~19~~ 1 in which the triazine based species is selected from melamine, triphenyl melamine, melam (l,3,5-triazine-2,4,6-triamine-n-(4,6-diamino-l,3,5- triazine-yl)), melem ((-2,5,8-triamino-l,3,4,6,7,9,9b-heptaazaphenalene)), melon (poly {8-amino-I,3,4,6, 7,9,9b-heptaazaphenalene-2,5diyl)imino}), bis and triaziridinyltriazine, trimethylsilyltriazine, melamine cyanurate, melamine phthalate, melamine phosphate, melamine phosphite, melamine phthalimide, dimelamine phosphate, phosphazines, low molecular weight polymers with triazine and phosphazine repeat units and isocyanuric acid and salts or derivatives thereof.

21. (original) An IOH according to claim 20, in which isocyanuric acid and salts or derivatives thereof are selected from isocyanuric acid, cyanuric acid, triethyl cyanurate, melamine cyanurate, trigylcidylcyanurate, triallyl isocyanurate, trichloroisocyanuric acid, 1,3 ,5-tris(2-hydroxyethyl)triazine-2,4,6-trione, hexamethylenentetramine.melam cyanurate, melem cyanurate and melon cyanurate.

22. (previously presented) An IOH according toclaim 18, in which the organic component is a derivative of phosphoric acid or boric acid.

23. (Canceled).

24. (previously presented) An IOH according to claim 1, in which the ionic organic component is used in combination with other ionic compounds which are capable of improving

compatibility and dispersion between the inorganic and organic components.

25. (original) An lOH according to claim 24, in which the other ionic compound is an amphiphilic molecule that incorporates a hydrophilic ionic group along with hydrophobic alkyl or aromatic moieties.

26. (previously presented) An IOH according to anyone of the preceding claims claim 1, which further comprises one or more coupling reagents.

27. (original) An IOH according to claim 26, in which the coupling reagent is selected from an 9rganically functionalised silane, zirconate and titanate.

28. (original) An IOH according to claim 27, in which the silane coupling reagent is tri-alkoxy, acetoxy or halosilanes functionalised with amino, epoxy, isocyanate, hydroxyl, thiol, mercapto andlor methacryl reactive moieties or modified to incorporate functional groups based on triazine derivatives, long chain alkyl, aromatic or alkylaromatic moieties.

29. (Withdrawn) A method for the preparation of the IOH defined in claim 1, which comprises mixing components (i) and (ii) or constituents thereof in one or more steps.

30. (Withdrawn l) A method according to claim 29, in which mixing is achieved using melt, solution or powder processing.

31. (Withdrawn, previously presented) A method according to claim 29, in which the mixing is achieved using solution processing.

32. (Withdrawn, previously presented) A method for using the IOH defined in anyone of olaims 1 to 28 claim 1 as a fire resistant material.

33. (Withdrawn, previously presented) A fire resistant formulation which comprises:

(i) the IOH defined in claim 1; and
(ii) one or more flame retardants.

34. (Withdrawn) A formulation according to claim 33, in which the flame retardant is selected from phosphorus derivatives, nitrogen containing derivatives, molecules containing borate functional groups, molecules containing two or more alcohol groups, molecules which endothennically release non-combustible decomposition gases and expandable graphite.

35. (withdrawn) A formulation according to claim 34, in which the phosphorus derivatives are selected from melamine phosphate, dimelamine phosphate, melamine polyphosphate, ammonia phosphate, ammonia polyphosphate, pentaerytbritol phosphate, melamine phosphite and tripheny lphosphine.

36. (withdrawn, previously presented) A formulation according to claim 34, in which the nitrogen containing derivatives are selected from melamine, melamine cyanurate, melamine phthalate, melamine phthalimide, melam, melem, melon, melam cyanurate, melem cyanurate, melon cyanurate, hexamethylene tetraamine, imidazole, adenine, guanine, cytosine and thymine.

37. (withdrawn, previously presented) A formulation according to claim 34, in which the molecules containing borate functional groups are selected from ammonia borate and zinc borate.

38. (withdrawn, previously presented) A formulation according to claim 34, in which the molecules containing two or more alcohol groups are selected from pentaerytbritol, polyethylene alcohol, polyglycols and carbohydrates.

39. (withdrawn, previously presented) A formulation according to any claim 34, in which the molecules which endothermically release non-combustible decomposition gases are selected from magnesium hydroxide and aluminum hydroxide.

40. (withdrawn, previously presented) A method for the preparation of the fire resistant formulation defined in claim 33, which comprises mixing the following components or constituents thereof in one or more steps:
(i) an expandable or swellable layered inorganic component: and
(ii) an organic component including at least one ionic organic component and one or more neutral organic components which are intercalated between and/or associated with the layer(s) of the inorganic component.the ionic or neutral organic components being capable of decomposing or subliming endothermically, and/or releasing volatiles with low combustibility on decomposition and/or inducing charring of organic species during thermal decomposition or combustion.

41. (withdrawn) A method according to claim 40, in which mixing is achieved using melt, solution or powder processing.

42. (withdrawn, previously presented) A method according to claim 40, in which the mixing is achieved using melt processing in a twin screw extruder or batch mixer; or powder processing using a high shear powder mixer or milling procedures.

43. (withdrawn, previously presented)) A polyamide fire resistant formulation which comprises either:
(A) (i) the IOH defined in claim 1; and
(ii) a polyamide based matrix; or
(B) (i) a fire resistant formulation defined in comprising the IOH defined in claim 1 and one or more flame retardants; and
(ii) a polyamide based matrix.

44. (withdrawn) A formulation according to claim 43, in which the polyamide based matrix comprises generic groups with repeat units based on amides selected from Nylon4, Nylon6, Nylon7, Nylon11, Nylon12, Nylon46, Nylon66, Nylon 68, Nylon610, Nylon612 and aromatic polyamides and co-polymers, blends or alloys thereof.

45. (withdrawn, previously presented) A fonnulation according to claim 43, in which the polyamide based matrix is selected from Nylon12, Nylon6 and Nylon66 and co-polymers, alloys or blends thereof.

46. (withdrawn, previously presented) A formulation according to claim 43, which further comprises one or more additives.

47. (withdrawn) A formulation according to claim 46, in which the additives are selected from polymeric stabilisers; lubricants; antioxidants; pigments, dyes or other additives to alter the materials optical properties or colour; conductive fillers or fibers; release agents; slip agents; plasticisers; antibacterial or fungal agents; and processing agents.

48. (withdrawn) A formulation according to claim 47, in which the polymeric stabiliser is a UV, light or thermal stabilizer.

49. (withdrawn, previously presented) A formulation according to claim 47, in which the processing agents are selected from dispersing reagents, foaming or blowing agents, surfactants, waxes, coupling reagents, rheology modifiers, film forming reagents and free radical generating reagents.

50. (withdrawn, previously presented) A formulation according to claim 43, in which the polyamide based matrix is Nylonl2, Nylon6 and/or Nylon66; the IOH is montmorillonite or hectorite modified with melamine hydrochloride andlor melamine cyanurate hydrochloride andlor melamine and/or melamine cyanurate; and the flame retardant is melamine cyanurate and/or magnesium hydroxide; and the additive is a processing agent and/or a polymeric stabiliser.

51. (withdrawn, previously presented) A formulation according to claim 46, in which the polyamide based matrix is present in an amount of about 45 to about 95% w/w, the IOH is present in an amount less than about 25% w/w and the flame retardant and/or additives are

present in an amount less than about 30% w/w.

52. (withdrawn, previously presented) A formulation according to claim 46, in which the polyamide based matrix is present in an amount greater than about 75% w/w, the IOH is present in an amount less than about 3% w/w, the melamine cyanurate flame retardant is present in an amount of about 11 to about 15% w/w and additives are present in an amount of about less than about 4% w/w.

53 . (withdrawn, previously presented) A formulation according to claim 46, in which the polyamide based matrix is present in an amount greater than about 75% w/w, the IOH is present in an amount less than about 3% w/w, the melamine cyanurate flame retardant is present in an amount of about 11 and about 15% w/w, magnesium hydroxide flame retardant present in an amount of about 1 and about 5% w/w and additives are present in an amount less than about 4% w/w.

54. (withdrawn, previously presented) A method for the preparation of the polyamide fire resistant
formulation defined in claim 43, which comprises dispersing an inorganic-organic hybrid (IOH) comprising:
(i) an expandable or swellable layered inorganic component: and
(ii) an organic component including at least one ionic organic component and one or more neutral organic components which are intercalated between andlor associated with the layer(s) of the inorganic component the ionic or neutral organic components being capable of decomposing or subliming endothermically. and/or releasing volatiles with low combustibility on decomposition and/or inducing charring of organic species during thermal decomposition or combustion and optionally including one or more fire retardants into the polyamide based matrix in one or more steps.

55. (withdrawn) A method according to claim 54, in which at least some of the components are ground prior to mixing.

56. (withdrawn) A method according to claim 55, in which the components are ground to a particle size less than about 200 microns.

57. (withdrawn, previously presented) A method according to claim 55, in which dispersion is achieved using melt, solution or powder processing.

58. (withdrawn, previously presented) A method according to claim 55, in which the dispersion is achieved using melt processing in a single or twin screw extruder, batch mixer or continuous compounder.

59. (withdrawn, original) A method according to claim 58, in which the melt processing is conducted in a twin screw extruder.

60. (withdrawn, previously presented) A method according to claim 54, in which the dispersion occurs at a sufficient shear rate, shear stress and residence time to disperse the IOH at least partially on a nanometer scale.

61. (withdrawn, previously presented) A fire resistant article or parts thereof which is composed wholly or partly of the IOH as defined in claim 1.

62. (withdrawn) A fire resistant article or parts thereof as defined in claim 61, which is used in transport, building, construction, electrical or optical applications.

63. (withdrawn) A fire resistant article or parts thereof as defined in claim 62, in which the transport application is air, automotive, aerospace or nautical.

64. (withdrawn, previously presented) A fIre resistant article or parts thereof as defined in claim 61, which is a hollow article or sheet.

65. (withdrawn, previously presented) A fire resistant article or parts thereof as defined in

claim 61 which is selected from pipes, ducts, fabric, carpet, cables, wires, fibres, Environmental control systems, stowage bin hinge covers, cable trays, ECS duct spuds, latches, brackets, passenger surface units and thermoplastic laminate sheet.

66. (withdrawn, previously presented) A fire resistant hollow article or parts thereof which is composed wholly or partly oflhe fire resistant formulation defined in claim 52 and manufactured by rotational moulding or extrusion.

67. (withdrawn, previously presented) A fire resistant fibre, fabric, carpet or parts thereof which is composed wholly or partly of the fire resistant formulation defined in claim 52 and manufactured by melt spinning or extrusion.

68. (withdrawn, previously presented) A fire resistant article or parts thereof which is composed wholly or partly of the formulation defined in claim 52 and manufactured by sintering.

69. (withdrawn, previously presented) A fire resistant article or parts thereof which is composed wholly or partly of the fire resistant formulation defined in claim 52 and manufactured by injection or compression moulding.

70. (canceled)

71. (canceled)